Fusion

Newsletter of the Southern African Institute of Welding

April 2017

SAIW
Southern African Institute of Welding

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SAIW Foundation provides IWT training... ... are you the next King?

Nndwakhulu Mufamadi, known as King, is a most deserving recipient of the SAIW Foundation bursary to undertake the International Welding Technologist (IWT) training course. King obtained both a National Diploma and B.Tech degree in Engineering Metallurgy from the Vaal University of Technology, having completed his training in 2012.

Following the completion of his studies at VUT, King worked for a period of time at the University of Johannesburg Metal Casting Technology Station during 2014 and 2015. When he applied for the IWT bursary in early 2016, he was working at Metal Protection Engineering on a volunteer basis, in order to obtain working experience so that he could unearth work opportunities.

As Metal Protection Engineering is a welding company and King displayed a passion for welding, it was a match made in heaven for SAIW Foundation to provide King with additional skills to improve his prospects in the welding field. King was dedicated during the IWT training course and made full use of this opportunity, proving to be a dedicated and active participant in the group of students undertaking the IWT course. His dedication showed in his results and he was one of the top achievers in the class, having passed all his exams on the first attempt, many with distinction. SAIW Foundation is proud to have provided King with the opportunity and we know he will put the knowledge that he has acquired to improve and benefit the welding industry.

King is now an employee at Metal Protection Engineering (MPE) and is filling the position of a Welding Co-ordinator. The training he received on the IWT programme is adding value to MPE as he helps to ensure the welds the company performs are of the highest quality as required by ISO 3834.

Can you be like King? SAIW Foundation invites suitable candidates to apply for a bursary to undertake the IWT course at SAIW in 2017. Should you meet the access conditions and you have a passion for welding, please contact SAIW to apply.

Nndwakhulu Mufamadi (King) receiving his IWT Certificate from SAIW President Morris Maroga

Focus on Standards – ISO/TR 15608

In this edition of Focus on Standards we discuss ISO/TR 15608 which has recently been revised and was released for publication by ISO in February 2017. Now in its fourth edition, this technical report provides guidelines for a uniform system for grouping materials not only for welding purposes, but can also be used for heat treatment, forming and non-destructive testing. The standard covers grouping systems for the following standardized materials and alloys: steel; aluminium; copper; nickel; titanium; zirconium and cast irons.

The materials are grouped according to their chemical and mechanical specifications. Metallurgically there are two routes to influence a material's properties, the chemical composition of the material and the mechanical processing route to obtain the required micro-structure and properties. The two routes may be interdependent.

These groupings are important as materials in the same group have similar weldability and therefore react in a similar manner when welded. Therefore as per table 3 in ISO 15614-1, if a test piece is welded in a particular group, all materials in the range of qualification groups specified are qualified by that particular Welding Procedure Qualification Record (WPQR or PQR).

The American system similarly classifies materials into groups, however ASME IX in QW422 explicitly classifies grades of materials to groups and not on the chemical composition and mechanical properties such as is the case with ISO 15608. Should a material not be specified to a grouping in the American system, it may be regarded as unassigned and therefore requires independent procedure qualification despite the material technically fulfilling the requirements of a particular grouping. As ISO 15608 is based on the properties of the material, all materials can be grouped according to the properties and weldability of the material. QW422 has for a number of years now also included the ISO 15608 classification of materials. Whilst there are similarities between the groupings of ISO 15608 and QW422, the systems do not equate to one another and need to be considered independently.

In ISO 15608, group 1 contains steels with a specified yield strength upto a maximum of 460MPa, there are 4 sub groups within this group. The first three sub-groups are for different strength levels as per the detail in the table below with the fourth group reserved for steels with improved corrosion resistance such as the weathering steels produced under the CORTEN trademark.

Group	Subgroup	Type of steel
1		Steels with a specified minimum yield strength $R_{eH} \leq 460$ N/mm² [a] and with analysis in per cent (%):
		C ≤ 0,25
		Si ≤ 0,60
		Mn ≤ 1,8
		Mo ≤ 0,70[b]
		S ≤ 0,045
		P ≤ 0,045
		Cu ≤ 0,40[b]
		Ni ≤ 0,5[b]
		Cr ≤ 0,3 (0,4 for castings)[b]
		Nb ≤ 0,06
		V ≤ 0,1[b]
		Ti ≤ 0,05
	1.1	Steels with a specified minimum yield strength $R_{eH} \leq 275$ N/mm²
	1.2	Steels with a specified minimum yield strength 275 N/mm² < $R_{eH} \leq 360$ N/mm²
	1.3	Normalized fine-grain steels with a specified minimum yield strength $R_{eH} > 360$ N/mm²
	1.4	Steels with improved atmospheric corrosion resistance whose analysis may exceed the requirements for the single elements as indicated in group 1

The common structural steel now used in South Africa conforms to the specification EN 10025-2 S355JR which is classed as group 1 and sub-group 1.2 (QW422 – P1 Group 2).

Carbon steels that have been thermo-mechanically treated or quench and tempered are included in groups 2 and 3. A common example of this type of material is Weldox 700™ (EN 10025-6 S690) which is classified as group 3.1 (QW422 – P11B Group 3).

2		Thermomechanically treated fine-grain steels and cast steels with a specified minimum yield strength $R_{eH} > 360$ N/mm²
	2.1	Thermomechanically treated fine-grain steels and cast steels with a specified minimum yield strength 360 N/mm² < $R_{eH} \leq 460$ N/mm²
	2.2	Thermomechanically treated fine grain steels and cast steels with a specified minimum yield strength $R_{eH} > 460$ N/mm²
3		Quenched and tempered and precipitation hardened fine-grain steels except stainless steels with a specified minimum yield strength $R_{eH} > 360$ N/mm²
	3.1	Quenched and tempered fine-grain steels with a specified minimum yield strength 360 N/mm² < $R_{eH} \leq 690$ N/mm²
	3.2	Quenched and tempered fine-grain steels with a specified minimum yield strength $R_{eH} > 690$ N/mm²
	3.3	Precipitation-hardened fine-grain steels except stainless steels

Creep resistant materials which are primarily alloyed with Chromium and Molybdenum are classified in group 5. The commonly used creep resistant alloys 1Cr ½Mo (13CrMo4-5) is classified as group 5.1 (QW422 P4 Group 1) while the 2¼Cr 1Mo (10CrMo9-10) creep resistant alloy is classified in group 5.2 (QW422 P5A Group 1). As the new generation high temperature creep resistant alloy P91(X10CrMoVNb9-1) alloy contains vanadium, the material is classified as group 6.4 (QW422 P15E Group 1).

5		Cr-Mo steels free of vanadium with C ≤ 0,35 %
	5.1	Steels with 0,75 % ≤ Cr ≤ 1,5 % and Mo ≤ 0,7 %
	5.2	Steels with 1,5 % < Cr ≤ 3,5 % and 0,7 % < Mo ≤ 1,2 %
	5.3	Steels with 3,5 % < Cr < 7,0 % and 0,4 % < Mo < 0,7 %
	5.4	Steels with 7,0 % < Cr ≤ 10,0 % and 0,7 % < Mo ≤ 1,2 %
6		High vanadium alloyed Cr-Mo-(Ni) steels
	6.1	Steels with 0,3 % ≤ Cr ≤ 0,75 %, Mo ≤ 0,7 % and V ≤ 0,35 %
	6.2	Steels with 0,75 % < Cr ≤ 3,5 %, 0,7 % < Mo ≤ 1,2 % and V ≤ 0,35 %
	6.3	Steels with 3,5 % < Cr ≤ 7,0 %, Mo ≤ 0,7 % and 0,45 % ≤ V ≤ 0,55 %
	6.4	Steels with 7,0 % < Cr < 12,5 %, 0,7 % < Mo < 1,2 % and V < 0,35 %

The generally difficult to weld Ferritic / Martensitic and Precipitation hardened alloys are grouped together in group 7. Austenitic Stainless Steel alloys are in Group 8 while the Duplex Stainless Steels are together in group 10. Nickel alloys are grouped in group 9. High carbon steels are classified in group 11.

Aluminium alloys are covered by groups 21 to 26. Common alloys found in the market are grouped as follow: Alloy 1050 – Group 21; Alloy 5083 – Group 22.4; Alloy 5182 – Group 22.4; Alloy 6061 – Group 23.1; Alloy 6082 – Group 23.1

Group	Subgroup	Type of aluminium and aluminium alloy
21		Pure aluminium < 1 % impurities or alloy content
22		Non heat treatable alloys
	22.1	Aluminium-manganese alloys
	22.2	Aluminium-magnesium alloys with Mg ≤ 1,5 %
	22.3	Aluminium-magnesium alloys with 1,5 % < Mg ≤ 3,5 %
	22.4	Aluminium-magnesium alloys with Mg > 3,5 %
23		Heat treatable alloys
	23.1	Aluminium-magnesium-silicon alloys
	23.2	Aluminium-zinc-magnesium alloys
24		Aluminium-silicon alloys with Cu ≤ 1 %
	24.1	Aluminium-silicon alloys with Cu < 1 % and 5 % < Si < 15 %
	24.2	Aluminium-silicon-magnesium alloys with Cu < 1 %; 5 % < Si < 15 % and 0,1 % < Mg ≤ 0,80 %
25		Aluminium-silicon-copper alloys with 5 % < Si < 14 % ; 1 % < Cu < 5 % and Mg < 0,8 %
26		Aluminium-copper alloys with 2 % < Cu ≤ 6 %
NOTE		Groups 21 to 23 are generally for wrought materials and groups 24 to 26 are generally for cast materials.

If you are having problems assigning particular grades to a group as per ISO 15608, there is help at hand. There are three further technical reports which assign the material classification to the intended group. ISO/TR 20172 is for Welding – Grouping systems for European materials, ISO/TR 20173 for American materials and ISO/TR 20174 for Japanese materials.

ISO 3834 certification on the up

We have said numerous times in Fusion how important ISO 3834 certification is for any fabrication company. It is the "stamp of quality" and gives all end-users the assurance that they are dealing with a professional fabricator whose work is approved by the highest authority in the land.

Herman Potgieter, CEO of SAIW Certification, which manages ISO 3834 certification scheme, says that this is not for big companies only. It's for all companies. "In fact smaller, lesser known companies could benefit more because this stamp of approval shows they're on a par with the best," he says.

Below are some of the companies that have been certified recently. We wish them all a hearty congratulations.

Betterect Pty Ltd

CCI Engineering Projects

EPF Projects

FFS Refiners

Heat Exchangers

Crusher Support Services

Eriger

Mining Mechanical and Off-Shore Engineering

ISO 3834 Company Certification – Complaints and Appeals

A company certification scheme is only as good as the credibility and reputation of the certification scheme. SAIW Certification is committed to operating a scheme which upholds a high standard for the manufacture of fusion welded products.

Gaining ISO 3834 company certification is a statement that the fabricator has a system in place which will allow the manufacturer to produce a welded product to an appropriate standard and conforms to the standards to which the product is manufactured.

There is therefore an expectation that the quality of product produced is at a satisfactory level and that public safety is upheld as per the requirements of the Pressure Equipment Regulations and Occupational Health and Safety Act of South Africa. SAIW Certification operates the IIW Manufacturer Certification Scheme in accordance to the requirements of ISO 17021. When SAIW Certification undertakes an audit of a company, only a sample of the work is checked to confirm compliance with the requirements of the standard. It is practically not possible to verify that all the work that the company undertakes complies with the requirements of the standard. In order to maintain a scheme with credibility and a positive reputation, and conform to the requirements of ISO 17021, it is required that there is a channel whereby complaints from the public and users of the manufactured products can raise their concerns with respect to potential non-compliance to the required standards.

Herman Potgieter, GM SAIW Certification

GAINING ISO 3834 COMPANY CERTIFICATION IS A STATEMENT THAT THE FABRICATOR HAS A SYSTEM IN PLACE WHICH WILL ALLOW THE MANUFACTURER TO PRODUCE A WELDED PRODUCT TO AN APPROPRIATE STANDARD AND CONFORMS TO THE STANDARDS TO WHICH THE PRODUCT IS MANUFACTURED.

SAIW Certification has been authorised by the IIW as the Authorised National Body for Company Certification (ANBCC) in South Africa. The IIW Manufacturer Certification Scheme operated by SAIW Certification in South Africa is overseen by the Welding Fabricator Board which is composed of end users, engineering consultants, manufacturers and other interested parties. The Welding Fabricator Board is an organ of SAIW Certification and reports to the SAIW Certification Governing Board.

SAIW Certification has procedures to deal with complaints and appeals as per the requirements of ISO 17021. This Complaints and Appeals procedure (GOP04) is available on the SAIW Certification website by following Certifications and Appeals and Complaints tabs on the website for further detail.

A complaint is defined as: A written submission sent to SAIW Certification Secretariat, either via e-mail or registered post, whereby a Complainant officially lodges a complaint in respect of the competence, integrity or quality of work of any Certified Company.

An appeal is defined as: A written request made by any interested party for reconsideration of any substantive decision made as a result of a Complaint, an Inquiry Panel or other body of SAIW Certification.

On receipt of a complaint, SAIW Certification is obliged to acknowledge receipt of the complaint in writing within 15 working days and shall also inform the respondent of the complaint. Following the notification of the complaint, the Respondent shall be required, within 20 working days of the notice, to submit a written response to SAIW Certification Secretariat setting out the Respondent's point of view with respect to the complaint.

SAIW Certification will appoint a Complaints Panel, consisting of at least 2 members from the Welding Fabricator Board to consider the complaint.

The Complaints Panel will decide if the complaint has no merit in which case it will be dismissed; or the complaint has merit; or the Complaint Panel is not in a position to make a decision and further investigation is required. In the latter case, the Complaints Panel will recommend to the Welding Fabricator Board that an Inquiry Panel of no less than 3 persons is appointed to conduct an in-depth investigation into the complaint. Should any person or entity be aggrieved by the decision of the Complaints Panel, that person or entity may send a written request to SAIW Certification for an Inquiry Panel to be appointed to consider the Complaint.

The Inquiry Panel is obliged to consider the Complaint in a manner that is fair and reasonable in the circumstances, taking into account the values of openness, transparency and accountability. The Complainant and Respondent (or their representatives) shall both be given the opportunity to present their evidence to the Inquiry Panel and call witnesses, ask questions or cross examine as necessary. The Inquiry Panel shall make a finding that either the Complaint is valid or not. In the case of the complaint being invalid, it shall be dismissed. Where the complaint is found to be valid, the Inquiry Panel will recommend appropriate sanction to the Welding Fabricator Board.

The Certification Agreement between SAIW Certification and the Manufacturer provides for 3 scenarios where the Manufacturer has not complied with the requirements of the scheme:

a) The Manufacturer may opt to renounce their certification in which case the certification agreement is terminated.

b) The Welding Fabricator board may suspend the Manufacturer's certification for a period of time until the reasons for suspension have been corrected and certification can be re-instated.

c) The Welding Fabricator board may revoke the Manufacturer's certification if it is deemed that the cause is of a serious nature.

Where a Manufacturer is aggrieved by the decision of the Inquiry Panel, the Manufacturer may lodge an application for Appeal as per the procedure. An Appeals Panel will be appointed by the Welding Fabricator Board to consider the matter.

Legal representation is not allowed in the SAIW Certification Complaint hearing, Inquiry hearing or the Appeals hearing as these are dealt with as internal issues. However, the Appeals panel will have the discretion to allow either party legal representation in cases that are of a very serious or complex nature. Parties do have the opportunity to use the legal justice system, however, it is recommended that the internal procedure is followed to its conclusion.

SAIW CERTIFICATION HAS PROCEDURES TO DEAL WITH COMPLAINTS AND APPEALS AS PER THE REQUIREMENTS OF ISO 17021. THIS COMPLAINTS AND APPEALS PROCEDURE (GOP04) IS AVAILABLE ON THE SAIW CERTIFICATION WEBSITE BY FOLLOWING CERTIFICATIONS AND APPEALS AND COMPLAINTS TABS ON THE WEBSITE FOR FURTHER DETAIL.

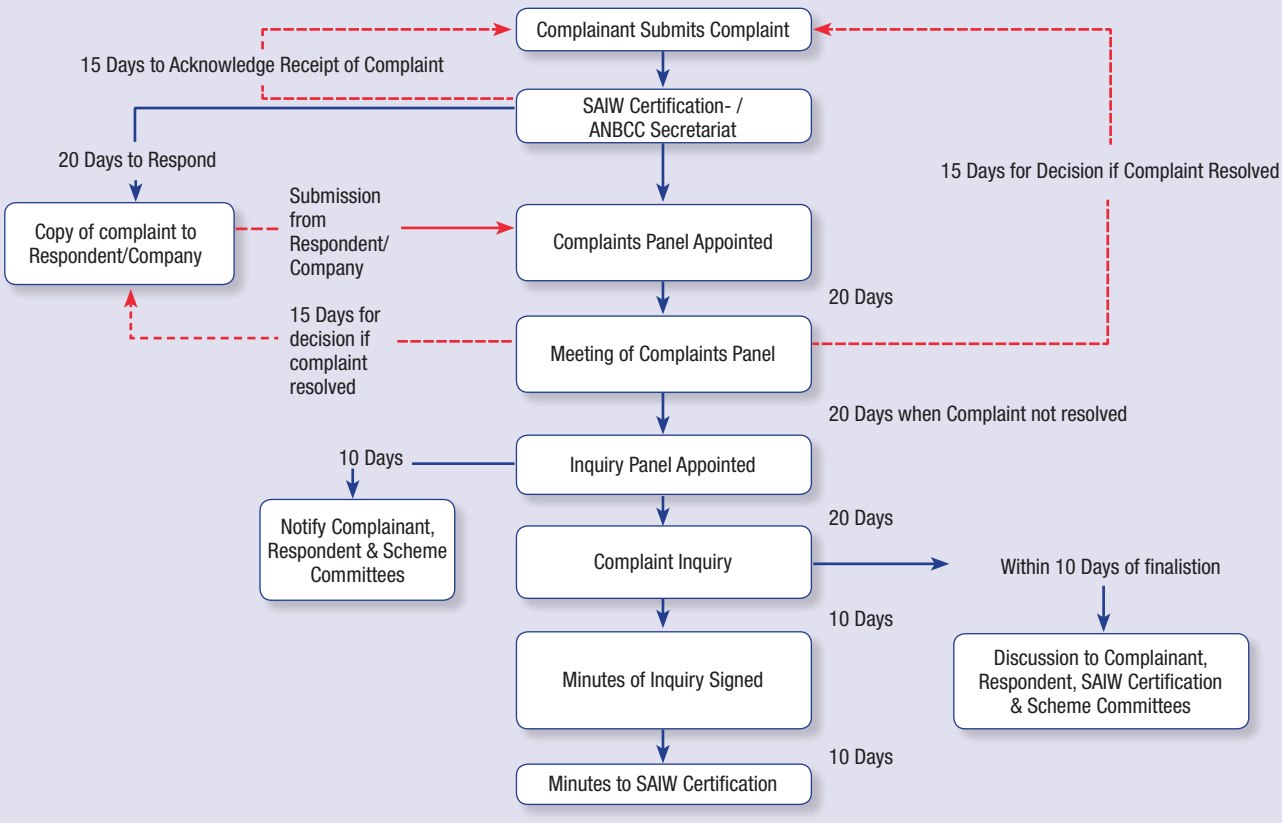
The background to the complaints and appeals processes are that SAIW Certification must uphold the standards of a body which is certifying companies giving them credibility in the field of manufacturing fusion welded products.

It is attesting to the ethics and quality of companies. Consequences for certified companies breaching the standards of the ISO 3834 certification scheme can be severe. At the same time, the certification body has to be fair and transparent. Wherever needed, the good practices that are expected of a certification body are applied so, for example, no member of the panel may have a conflict of interest in relation to a complaint and the organizations involved. Impartiality has to be seen as well as practiced.

SAIW Certification encourages all parties to submit a written complaint where they believe that the principles of the certification scheme have not been upheld such that the integrity, credibility and reputation of the IIW Manufacturer Certification Scheme can be maintained. SAIW Certification cannot act on cases of hearsay, but requires evidence of non-compliance that can be thoroughly investigated and followed-up on.

All enquiries in this regard should be submitted to Mr Herman Potgieter who is the Secretariat for the Welding Fabricator Board and CEO of SAIW Certification.

Complaint Process for Personnel and Certified Companies



Changing the World

The Certification Dinner held on February 17th was, once again a magnificent affair. The efforts of the SAIW learners were appropriately rewarded and the atmosphere was jubilant. It was so pleasing to see such a cross-section of South African youth doing something so positive with their lives. As Madiba famously said: "Education is the most powerful weapon you can use to change the world" and this is precisely what these young men and women are doing. Well done to you all, keep up the good work!

Here is a selection of some of the graduates receiving their awards.

INTERNATIONAL WELDING INSPECTOR (IIW) – COMPREHENSIVE

Michael Amir

IIW – SPECIALIST

Duran Naidoo

IIW – TECHNOLOGIST

Nnmwakhulu Mufamadi

Pasklys Nhlapo

WELDING INSPECTOR LEVEL 1

WELDING INSPECTOR LEVEL 1 – DISTINCTION


Christiaan Orban


Cole Davids


Dennis Starck


Nicholas Hough


Pieter Jordaan

WELDING INSPECTOR LEVEL 2 – DISTINCTION


Hendrik Erasmus


Kavanthran Naidoo


Professor Sowoni

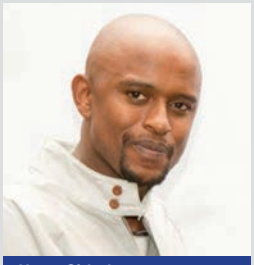

Rudolf Engelbrecht


Sydney Mtombeni

WELDING INSPECTOR LEVEL 2

INSPECTOR LEVEL 2 AND IIW (S)


Manare Kola with distinction


Hope Sithole


Agnes Nkosi


Aleck Mofati


Desmond Mathepe


Willem Conradie


Lindiwe Ndyibithi


Kenneth Zulu


Phillemon Mokau

JOB KNOWLEDGE 123

Eddy Current Testing

Eddy current testing is an inspection method that can be used for a variety of purposes including the detection of cracks and corrosion, material and coating thickness measurement, material identification and, in certain materials, heat treatment condition. The process relies upon a material characteristic known as electro-magnetic induction. When an alternating current is passed through a conductor – a copper coil for example – an alternating magnetic field is developed around the coil, the field expanding and contracting as the alternating current rises and falls. If the coil is then brought close to another electrical conductor the fluctuating magnetic field surrounding the coil permeates the material and induces a circulating or eddy current to flow in the conductor. This eddy current, in its turn, develops its own magnetic field. This 'secondary' magnetic field opposes the 'primary' magnetic field and thus affects the current and voltage flowing in the coil. Any changes in the conductivity of the material being examined such as near surface defects or differences in thickness will affect the magnitude of the eddy current and this change can be detected using either the primary coil or a second detector coil. This forms the basis of the eddy current inspection technique.

As with any inspection method there are both advantages and disadvantages to eddy current testing. The method can be used only on conductive materials and, although all metals can be inspected, the depth of penetration of the eddy currents varies. Eddy current density is higher and defect sensitivity greatest at the surface and decreases with depth, the rate of the decrease depending on the "conductivity" and "permeability" of the metal. The conductivity of the material affects the depth of penetration with a greater flow of eddy current at the surface in high conductivity metals and a subsequent decrease in penetration in metals such as copper and aluminium.

PERMEABILITY IS THE EASE WITH WHICH A MATERIAL CAN BE MAGNETISED. THE GREATER THE PERMEABILITY THE SMALLER WILL BE THE DEPTH OF PENETRATION. 'NON-MAGNETIC' METALS SUCH AS AUSTENITIC STAINLESS STEELS, ALUMINIUM AND COPPER HAVE VERY LOW PERMEABILITY WHEREAS THE FERRITIC STEELS HAVE A MAGNETIC PERMEABILITY SEVERAL HUNDRED TIMES GREATER.

The depth of penetration may be varied by changing the frequency of the alternation current – the lower the frequency the greater is the depth of penetration. Unfortunately, as the frequency is decreased to give this greater penetration the defect detection sensitivity is also reduced. There is therefore, for each test, an optimum frequency to give the required depth of penetration and sensitivity.

A parameter known as the "standard depth of penetration", taken as the depth at which the eddy current value has reduced to 37% of that at the surface, can be calculated from the magnetic permeability, the metal's conductivity and the frequency of the alternating current in the probe. The standard depth of penetration is generally regarded as the criterion by which the efficiency of detection can be judged, although changes in the eddy current can be detected at depths of up to three times this figure. A simple calculation may be used to select the optimum probe frequency.

Fig 1 Pen type probe being used to examine bolt holes for cracks.

For any particular inspection the accuracy of the measurement of defect size, material thickness, heat treatment condition etc. is largely determined by the design of the coil (or coils) used in the examination whilst detection capability is also determined by material properties and the equipment characteristics. The selection of the probe is therefore critical for accurate results.

Some inspections involve sweeping through multiple frequencies to optimize results, or inspection with multiple coils to obtain the best resolution and penetration required to detect all possible flaws. It is always important to select the right probe for each application in order to optimize test performance.

The eddy current operator is therefore faced with a material whose conductivity and permeability are physical properties and outside of the operator's control. The parameters that can be selected are probe size, probe type and frequency of the alternating current, the selection depending upon the test requirements i.e crack detection, corrosion depth, coating thickness, heat treatment condition etc. Some equipment is designed to operate using multiple frequencies or with multiple probes in order to optimize the test performance and achieve the best detection performance and depth of penetration. The results are displayed either as a digital read-out for the more simple examinations such as thickness measurements or displayed on an oscilloscope screen as an X-Y display of resistance versus the inductive reactance. This gives a characteristic curve, the shape and size of which can be used to detect and size a defect as illustrated in Fig.2 to determine heat treatment condition or, as a quick sorting test, to establish the type of alloy.

In addition to selecting the optimum frequency the size of the probe can be varied – a large diameter coil will inspect a larger volume of metal and therefore reduce the inspection time – a small diameter probe, however, is more sensitive and better suited to detecting small

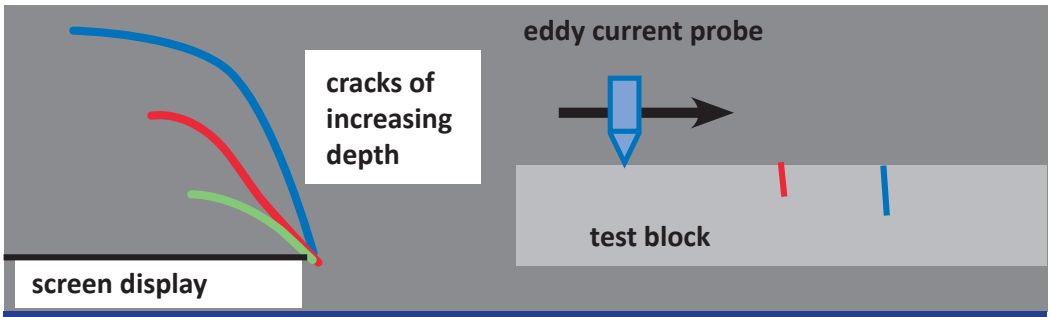


Fig. 2 Schematic of Screen Display

flaws. The large diameter probes are often used for the detection of large sub-surface flaws in castings and forgings and for the detection of corrosion; the small diameter pencil type probes for detecting cracks. Weld examination requires special probes to reduce noise from the permeability change across a weld.

As mentioned earlier eddy current testing can be used for a variety of inspection tasks. Chief amongst these is the inspection of welded joints using pencil probes as a replacement for the more conventional magnetic particle or liquid penetrant inspection techniques. A major advantage is that the process may be used underwater and can be used to scan welds through paint and other coatings. With respect to detection of linear defects such as cracks and lacks of fusion the defect should break the lines of the eddy currents ideally at right angles – as with magnetic particle inspection defects parallel to the eddy currents are likely to remain undetected. It is important therefore that the weld is scanned in the correct direction. Cracks as small as 0.5mm deep and 5mm in length are capable of being detected.

ENCIRCLING COILS ARE USED FOR AUTOMATED IN-LINE TUBE INSPECTION WITH WELDED TUBE LINES USING LOCALISED PROBES FOR WELD EXAMINATION.

By measuring the conductivity of a metal it is possible to identify and sort both ferrous and non-ferrous metal and with certain alloys - in particular the aluminium alloys - it is also possible to establish the heat treatment condition. Low frequency probes are used to detect generalised corrosion, particularly in the aerospace industry for the examination of aircraft skins. Specially designed "bobbin" probes can be used to inspect the bore of tubes in service for signs of pitting or corrosion and there are also probes specially designed to examine the bores of bolt holes for cracks.

Measuring the proximity of a component to the probe can also be used to determine coating thickness provided the coating is non-conductive. The "lift-off", the distance of the probe tip from the conductive surface, causes a change in eddy current flow which is measurable.

All of the systems must be calibrated using appropriate reference standards – as for any NDT method, this is an essential part of any eddy current examination procedure. The calibration blocks must be of the same material, heat treatment condition, shape and size of the item to be tested. For defect detection the calibration block contains artificial defects simulating defects; for corrosion detection a calibration block of different thicknesses is used.

The eddy current method requires more skill on the part of the operator than, say, MPI and penetrant inspection – it goes without saying that operator training is essential.

SAIW Foundation and ArcelorMittal in Education Partnership

We are very pleased to have entered into an important partnership with ArcelorMittal South Africa (AMSA) Science Centre in Welding to train six Grade 12 students. Part of the partnership agreement is that ArcelorMittal will provide material for training, funding and experiential training following the International Welder training at SAIW.

The six selected learners are Mohale Albert Mohale, Tebello Radebe, Bonkolo Luvuyo, Zelda Khumalo, Rose Mfabane and Princess Mpembe. (See pic)

ArcelorMittal Science Centre, Sebokeng

This is one of the three Science Centres which are located close to the company's operations in Vanderbijlpark, Newcastle and Saldanha respectively. These comprise ArcelorMittal South Africa's flagship corporate social investment project – a perfect example of a public private partnership that is addressing both a national development challenge and a serious and urgent business need. At the same time, this was a way for ArcelorMittal South Africa to "grow its own timber" by developing a pipeline of learners studying in engineering and related fields and who could potentially be future employees.

Sean Blake SAIW executive director thanked AMSA for their long-standing help over the years and looks forward to reciprocating in this most valuable way.


The first group of six

In the SPOTLIGHT

PAUL BRUWER

IN OUR SERIES OF PROFILES ON PEOPLE WHO HAVE MADE A DIFFERENCE TO THE WELDING/NDT INDUSTRY AND THE SAIW, WE TALK TO PAUL BRUWER, SAQCC CP-PV (COMPETENT PERSON PRESSURE VESSELS) AND AN IPE (INSPECTOR OF PRESSURISED EQUIPMENT), A MEMBER OF SAQCC CP/IPE COMMITTEE, CERTIFICATION BOARD AND ON THE SAIW BOARD OF DIRECTORS.

PAUL WAS BORN IN PARYS, FREE STATE, SCHOOLED AT HOERSKOOL SASOLBURG AND WENT ON TO ATTAIN A NATIONAL HIGHER DIPLOMA IN METALLURGICAL ENGINEERING AND AN M.ENG. IN WELDING ENGINEERING. TODAY PAUL IS PRINCIPAL INSPECTION SPECIALIST AT SASOL OVERSEEING BOTH THE AIA IN-SERVICE AND AIA MANUFACTURING DEPARTMENTS.

PAUL HAS BEEN MARRIED TO MALENE FOR THE PAST 31 YEARS AND THEY HAVE TWO CHILDREN, TYRONE (31) AND MONIQUE (25) AND ARE GRANDPARENTS TO TRISTAN (17 MONTHS). IN HIS SPARE TIME PAUL LIKES TO PLAY GOLF AND IS AN ARDENT FREE STATE RUGBY SUPPORTER.

F: Give us a brief outline of your career

PB: In 1985 I started as a trainee Metallurgical Technician at Iscor (now ArcelorMittal). Then, in 1991, I joined Sasol as a Metallurgical Technician. My welding and inspection career didn't really begin until a decade later in 2000 at Sasol Secunda Inspection where I became a manager for in-service inspections and later manager over the AIA department within an allocated group. From this position I developed to where I am now.

F: What does your current position entail?

PB: As Principal Inspection Specialist (Divisional Manager) for Sasol Secunda Inspection Authority I have numerous responsibilities including, to a large degree, all inspection activities, adherence to the Pressure Equipment Regulations and the resolution of any anomalies. I am supported by an exceptional inspection team.

F: How did you get involved with the SAIW?

PB: My involvement with the SAIW started in 2000 when I did my first course - Welding Inspectors Level 1. As my involvement in the industry grew I became increasingly better acquainted with the Institute and ultimately ended up in the roles I now fulfil at the SAIW.

F: Specifically describe your interest and link with CP and IPE

PB: I'm exceptionally grateful to be the manager of one of the biggest Inspection Authorities in Southern Africa consisting of a large work force of CP and IPE Inspectors who conduct daily inspections related to in-service and repairs to pressure equipment.

F: What do you think of the standard of Welding/NDT in South Africa and could you comment on the role that the SAIW is playing.

Welding: The standard of welding in South Africa generally measures up to international benchmarks. As with every field of expertise, striving for perfection is an ongoing process requiring determination and this is pertinent to welding in South Africa especially in the sense of delivering more competent and quality-conscious welders.

NDT: NDT in Southern Africa has become a very reliable source of quality assurance and is on a par with international standards compared with only two decades ago. Sasol's NDT Level III is part of the SAQCC NDT Scheme Committee and assists SAINT and the newly formed Professional Body of NDT to promote and establish suitable means to ensure that all end users and service providers receive the best NDT solutions.

The SAIW plays a vital role in imparting the necessary theoretical and practical knowledge to keep these two industries on a world-class level in Southern Africa. It is a professional and well-run organisation.

F: Any comments on the macroeconomic situation in South Africa and how this affects the local welding/NDT/steel industry?

PB: The uncertain state of our politics and economy at present definitely affects our business. But I am a firm believer that we have the power to overcome these obstacles and that we should use this opportunity to establish our independence from unpredictable economic cycles. We have excellent people with the skills and intelligence to have a global impact in the future. It is important to realize that whatever one does, one is in control of one's own destiny.

Qualification and Certification

CONGRATULATIONS TO THE PEOPLE BELOW WHO RECENTLY ACHIEVED QUALIFICATION AND CERTIFICATION.

Competent Person - Pressure Vessel

Basson CD
Blom T
Davis RG
Dayal K
Esterhuizen ES
Kriel S
Makoe MJ
Mashinini ME
Mavundla N
Mhlongo MSR
Mkwanazi GS
Morck KD
Mthombeni N
Ndlangamandla SS
Ngovene S
Nkosi SA
Phala DD
Pienaar D
Qebengu TJ
Seconds CG
Swarts N
Van Niekerk DG
Zungu GT

Competent Person Boilers

Dippenaar MC
Hanekom H
McKenzie GT
Nkosi SA
Singh N

Inspector of Pressure Equipment

Golbahram R
Mahamba MJ
Masina BA
Okafor H
Ramlugan MP
Shaw C
Viljoen HK
Vorster AD

MT 1

Adeyemo AO
Bennet HD
Fortune AC
Jiyane NP
Mashiane AP
Mbiza LM
Mokale M
Motebele LP
Mpedi MY
Mphegwa T
Ngcana XI
Ruthman RM
Smuts SJN

MT 2

Campbell IR
Daniels Z
Ferreira J
Kabongo GN
Manala V
Mashiane AP
Matabologe LS
Maughan S
Montsho LL
Muchweni L
Nel L
Reddy D
Singo A

PT 1

Bennet HD
Cronje DJH
Esterhuizen W
Jiyane NP
Mashiane AP
Matabologe LS
Mbiza LM
Nyawuza SLE
Ruthman RM
Smuts SJN

PT 2

Campbell IR
Fondling S
Hendricks I
Kabongo GN
Kushamba J
Mahlangu WT
Marebane RE
Mashiane AP
Maughan S
Montsho LL
Muchweni L
Nel L
Potgieter A
Reddy D
Roux JJ
Singo A
Tshongwe T
Wessels W

UT 1

Dickason H
Matjila MC
Matlala TG
Nguqu L
Nkosi JJ
Nkosi SH
Nxumalo TB

UT 2

Bush T
Chibongodze NT
Daniels Z
Delouw D
Hitchcock HF
Livino S
Shuter SS

UT WALL THICKNESS

Baloyi TE
Chokwe DMM
Djiendeu PM
Dolo D
Du Plooy B
Jiyane NP

Kok RRD
Kondeb BD
Lekgau K
Makhubele HP
Maluleke ML
Manyatsha TJ
Masalesa MS
Mashau MT
Matabane TN
Mogashoa T
Molemane TP
Mthimunye SW
Mudau M
Ndwande TR
Ngidi ST
Ngwenya MM
Phathakge MT
Rufu I
Sibande T
Sibanyoni JNM
Sithole LM
Sithole ML
Tswai MA
Yende PN

PAINTING INSPECTORS

Check TB
Jacobs KH
Joubert E
Mahlangu N
Mashile R
Mgidi SM
Moodley D
Musiiwa A
Ncube M
Nkosi KE
Odendaal J
Pretorius JJ
Sethole L

ASME

Adams GR
Bernon DA
Berry EM
Fransman WC
Kriel FJ
Loftus RL
Mkhwanazi PL
Mynde AM
Phillips EDL
Ramakokovhu TJ
Ramakulukusha FH
Sibanyone TCM
Smit DP
Swart P
Underhay J

BASICS

Ackermann JRA
Bardenhorst AE
Bierman L
Binneman G
Cameron L
Chebeia AD
Coetzee C
Dlamini MI
Dlamini NG
Ernest KB
George TA
Guliwe NP
Guthrie WP
Hans R
Hardev A
Herbert ZY
Jantjies FS
Kgosiemang SZ
Khumalo NB
Knipe KS
Kodilinye S
Kwetle MP
Lwandle BS
Maake NN
Mabona SWA
Maharaj I
Malepa PS
Masiteng RM
Mbewu AL
Mbonani TM
Mhlanga GM
Mkhaba S
Mkhize LG
Mkwai VL
Mofokeng MJ
Mofokeng SP
More LM
Motau MS
Mtsweni ES
Musekwa CC
Myburgh A
Mzoyi N
Ndluvo N
Nhlapo JM
Nkumbi SS
Ntsoane M
Nzuzu L
Pillay TC
Polakie J
Rabie DB
Rathnasabapathy D
Rheeder T
Roos R
Scheepers MMJ
Schlebusch ID
Shane E
Sikosana KS
Silinda SL
Simelane NC
Smit DWJ
Sontundu ML
Steytler DC
Swartz NJ
Tafira P
Toerien J
Topotsa C
van den Heever GD
Van der Merwe RA
Walljee YG
Zimmermann D

RT 1

Aphane ME
Magagula WW
Ngwenya SP

RT 2

Jooste JP

Visual Testing

Benevenuti M
Mbundwini MI

RT Interpreters

Barnard AR
Ebersohn WW

Focus on Courses

IIW: International Welding Inspection Personnel (IWIP) Programme

Shelton Zichawo

Shelton Zichawo

SAIW is a founding member of the International Institute of Welding (IIW), which is also focused on welding related training, research, standardisation of welding related activities and governance of the IIW system.

Through the IIW network, SAIW has an opportunity to network with over fifty countries on welding related matters. The nations meet at least once a year to discuss welding matters, one of which is welding training. SAIW has obtained accreditation from IIW to present the following training programmes:

International Welding Engineer (IWE);
International Welding Technologist (IWT);
International Welding Specialist (IWS);
International Welding Practitioner (IWP);
International Welder (IW); and
International Welding Inspection Personnel (IWIP).

SAIW has provided welding related training to the South African industry for many years. SAIW developed Welding Inspection and Welding Supervision training programmes during the 1980s and 1990s both of which preceded the respective IIW training programmes. In the early 2000s SAIW converted their Welding Supervision training programme to the IIW Welding Co-ordination training programme and has therefore offered the IWT, IWS & IWP programmes to the industry. The IWE programme is offered to industry through our University training partners.

In 2010 SAIW aligned the Welding Inspector Level 1 and Level 2 training programme to the IIW IWIP training curriculum, meaning that candidates who meet the access conditions for IWIP – Standard and who completed the SAIW Welding Inspector Level 2 programme would also receive the IIW IWIP – Standard diploma.

At the beginning of 2017 SAIW ran our first International Welding Inspection Personnel (IWIP) – Basic course and have now embarked on the journey to fully convert to the IIW programme. The IWIP programme comprises three levels which are:

- Basic level
- Standard level
- Comprehensive level.

The candidate progresses through the three levels of training completing the training at the highest level, which is the Comprehensive level.

Comparison between SAIW and IIW Inspection programme.

The IIW has three levels of training while the SAIW Welding Inspector programme has two. The two SAIW levels are Level 1 and Level 2, which when completed by a student result in the individual having attained the same level as the IIW Standard level since 2010. However to attain the IIW Standard qualification certificate the individual needs to meet the access conditions which requires a matric with maths and science as well as two years of welding inspection experience.

The systems are laid out differently so the only cross over point is at the Standard level. This means that if one goes through the SAIW Inspector Level 1, you must proceed to SAIW Inspectors Level 2 after which, on successful completion, coupled with two years' experience, allows one to be issued the IIW Standard level qualification.

For those who have completed their SAIW Level 1 they must proceed to the SAIW Level 2 course in order for them to attain the IIW qualification.

The two years' experience is another point of difference between the two systems. This creates an advantage as well as a disadvantage to the both the student and industry in the sense that there is a two year wait before one can proceed to the next level. This however ensures that people with qualifications higher than the basic level have appropriate industrial experience, which is good for industry as new recruits at the Standard level and higher will hit the ground running.

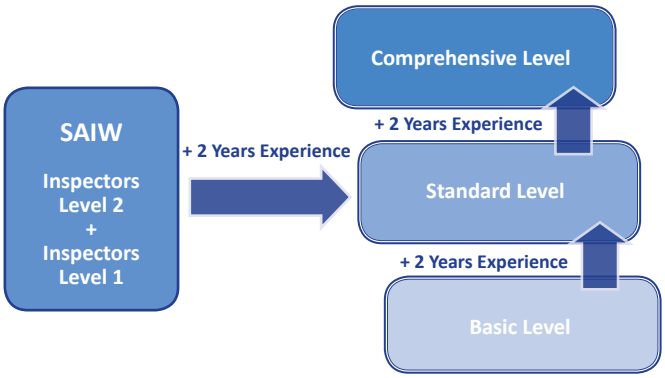


Figure 1 – Comparison of Welding Inspector programmes

An SAIW Level 1 inspector holds a partial qualification as a result of a decision taken years ago when the SAIW decided to break up the course into two portions which were respectively called SAIW Welding Inspector Level 1 and SAIW Senior Welding Inspector Level 2. The content was split between the "two levels" so ideally for an individual to have completed the entire course one should do both their Level 1 and Level 2. This carries the implication that a Level 1 Inspector holds partial knowledge, which is true. The SAIW Level 1 Welding Inspector is not taught about WPSs, NDT theory and their reports, quality control aspects such as QCPs, drawings, material testing processes and their

reports etc. The IIW Basic inspectors is taught all these items at a lower level than the IIW Standard Inspector thus the Basic Inspector is generally more equipped to easily be assimilated into a working environment as they have the basic knowledge of what the SAIW Level 2 Welding Inspector has.

The IIW basic Inspector is at a lower knowledge level than the SAIW Level 2 but is definitely at a superior level than the SAIW level 1.

The IIW has defined the duties of all three levels of Inspection personnel which creates an easy system for industry to work with in terms of duties and responsibilities of the IIW Inspection personnel within the workplace. The expectations of each level are clearly defined at the end of this article.

The IIW system recognises all its other courses and has thus created a framework that enables individuals to move from one qualification to another without necessarily going through the entire course. It recognises all subjects taught in some of its courses, therefore, individuals who have completed some courses can be exempt from undertaking some subjects. This is illustrated in the figure below.

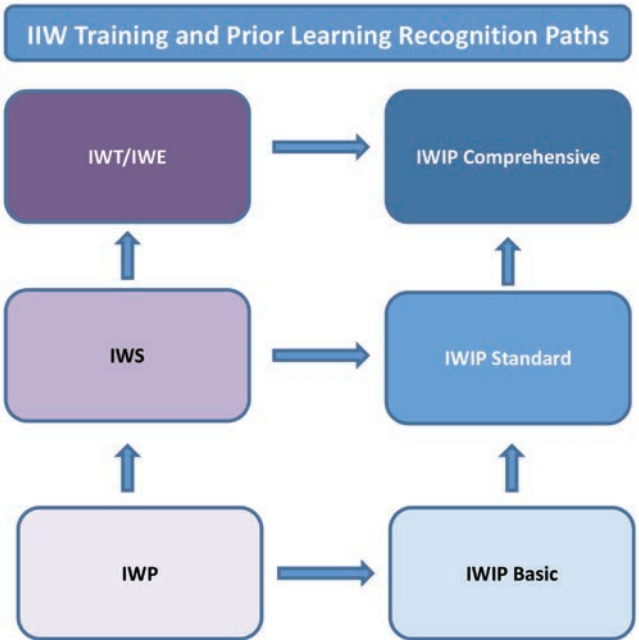


Figure 2: Comparison of the IIW Welding Co-Ordination and Welding Inspection programmes

The arrows show the directions in which the recognition works. An individual cannot go the opposite route. The IWIP course is laid out in two parts which are Welding Technology and Welding Inspection. The recognition from the IWP, IWS and IWT paths exempts an individual from doing the Welding Technology component of the IWIP course at which ever level they entered the course. For individuals who do not hold any of the IWP, IWS or IWT/IWE course they must undertake the Welding Technology and Welding Inspection modules to become qualified as an IWIP Basic level for starters and they can progress to the Standard level after two years welding inspection experience likewise for the comprehensive level. However for personnel that have the IWP, IWS or IWT/IWE qualifications, they simply have to do the respective Welding Inspection modules in order to obtain the Welding Inspector qualifications in addition to the Welding Co-ordination qualification already obtained.

Capabilities of the IWIP – B over the SAIW Inspector Level 1

No.	Subject	IWIP – B	SAIW Inspectors Level 1
1	Materials Technology	Greater Detail	Far less detail
2	Welding procedure Specifications	Can read & understand	Mere introduction
3	NDT Reports	Can read & understand	Not taught
4	QCPs, Weld Maps & Weld matrix	Can read and understand	Not taught
5	ISO 3834	Taught	Not taught
6	Drawings	Moderately taught	Not taught
7	Mechanical Test Reports	Can read & understand	Not taught

When preparation, production and inspection are over, the inspector must collate the observations, checklists, and results into a report that is structured to meet the needs of the client, PER Regulations (SANS 347), or a code of manufacture. This report is the document of reference, which could allow the tracing of a production parameter that proves after years of service to be contributing to a failure. It allows the tracing of responsibility to a specific supplier or contractor. The above table helps to illustrate how it is possible for the IWIP – B inspector to be much more geared to allow an individual to perform the above mentioned tasks as compared to the SAIW Welding Inspector Level 1. This is not to say the old Level 1 was not a great offering, it is merely a result of the course having been split in two years ago, which is why the SAIW Level 2 Welding Inspector is a great asset to the South African fabrication industry and it has helped many an inspector working overseas to be held in high esteem.

This course generally incorporates some of the latest concepts in welding technology such as the more advanced metal transfer modes such as Surface Tension Transfer (STT), Keyhole techniques, arc regions. In essence this course is a major improvement in bringing the flagship offering of the SAIW to world class standards. The introduction of the IWIP – B essentially puts the SAIW trained Welding Inspector at the same level as any other IIW member country trainees e.g. Germany, France, Portugal, Italy etc. This is definitely a move into the future as we face a more and more globalised world. As such our inspectors can move freely with qualifications that are recognised in various countries through the IIW banner.

The IIW access conditions for IWIP – Standard requires a candidate with a Matric with maths and science to access this level. However the IIW has an alternative route for candidates who do not meet this requirement which is the IWS 0 route. The SAIW Welding Quality Control course meets the syllabus requirements of IWS 0. A pass on this course coupled with the required experience allows progression for a candidate from Welding Inspector – Basic to Welding Inspector – Standard. The training on this course is also sufficient to provide a candidate an entry level position in the welding and fabrication sector such that they can obtain valuable work experience in order to pursue a career in this sector.

Continued on page 14

Focus on Courses – IIW: International Welding Inspection Personnel (IWIP) Programme

Contnued from page 13

Tasks of the Welding Inspector following training at the relevant level

The IIW Welding Inspector education and training programme will enable the candidate to effectively perform the following tasks:

BASIC (IWI-B): General knowledge of welding and inspection application and theory.

- ❒ Conduct direct unaided visual inspection to identify and evaluate welding imperfection according to acceptance criteria;
- ❒ Verify, witness and understand all welding related activities in fabrication, including (but not limited to) the following points:
  - Verify the adequacy of information on NDT reports (VT, PT, MT, RT, UT) for conventional techniques;
  - Verify data and adequacy of material certificates (base and filler materials);
  - Verify identification and traceability of the materials during the fabrication process;
  - Verify the compliance of raw materials and consumables against the applicable standards, codes and specifications;
  - Verify the implementation of the WPS in production for conventional applications (e.g. arc welding processes, steels);
- ❒ Verify the implementation of PWHT specifications in production;
- ❒ Witness welder approval tests including testing of the specimens or test coupons;
- ❒ Witness production test coupons;
- ❒ Read and understand an Inspection Testing Plan;
- ❒ Read and understand the construction drawings in relation to inspection activities; and
- ❒ Report any of the above actions to a qualified supervisor.

STANDARD (IWI-S): Advanced knowledge of welding and inspection theory and application.

- ❒ Supervise the activities of the IWI-B;
- ❒ Develop and provide instructions to IWI-B;
- ❒ Develop, comment and review Quality Control Plans and Inspection and Testing Plans based on product standards, codes, specifications, drawings and regulatory requirements;
- ❒ Witness procedure qualification tests including testing of the specimens;
- ❒ Verify the compliance of WQPRs and WPSs and welder qualifications and approvals against the applicable standards, codes and specifications for conventional applications (e.g. arc welding processes, steels, aluminium alloys - see Section 1 for detailed information);
- ❒ Verify the compliance of PWHT specifications against the applicable standards, codes and specifications;
- ❒ Verify the compliance of raw materials and consumables certificates against the applicable standards, codes and specifications;
- ❒ Take decisions on acceptance of quality documents related to welding fabrication (e.g NDT, material testing, production testing, etc.);
- ❒ Take decisions based on quality documents (e.g NDT, material testing, production testing, etc.) according to the requirements defined for the construction;
- ❒ Verify radiographic films quality adequacy (no interpretation);
- ❒ Identify and verify the relevant NDT techniques for a welded construction;
- ❒ Report on all the above actions.

COMPREHENSIVE (IWI-C): Intimate knowledge of welding and inspection theory and application.

- ❒ Manage the whole of the Welding Inspection activities;
- ❒ Supervise the activities of the IWI-S and IWI-B;
- ❒ Develop and provide instructions to IWI-S and IWI-B;
- ❒ Act as a technical expert for the Inspection function;
- ❒ Develop, comment and review Quality Control Plans and Inspection Testing Plans for applications not covered by product standards, codes, specifications, drawings and regulatory requirements; and
- ❒ Manage inspection activities for non-conventional applications with reference to materials, processes, and advanced destructive testing and NDT techniques.

Phillip off to Abu Dhabi

Phillippus Terblanche was the winner in the Welding category at the WorldSkillsSA competition, which was held at the Durban ICC from the 14th to 16th of February. He will represent South Africa at the International WorldSkills Competition in Abu Dhabi later this year.

During November 2016, SAIW held the SAIW Welding Challenge where 20 competitors from industry, private and public training colleges competed in the SAIW Youth Welding Challenge. The three top performers from this competition went through to the WorldSkillsSA event to compete as the winner of WorldSkillsSA in Welding and join the winners of the other 21 skill areas to compete in the International competition.

All 3 competitors upped their game after hard work and practice in the preceding months in preparation for this competition. SAIW's Etienne Nell says he is very pleased with Phillip's progress since winning the SAIW Youth Welding Challenge. At Abu Dhabi, Phillip will be competing against the best young welders in the world and he needed to put in a lot of effort to raise his own personal welding bar. "I commend him for doing this – he did very well at the WorldSkillsSA competition raising his performance by 60% - and I believe that he will be an excellent representative of South Africa's young welding community" says Nel. The hard work is not over for Phillip as he will need to raise his bar even further to compete in the International competition. Phillip will be entering an intensive training programme to improve his skill between now and October when he will go to Abu Dhabi to compete in WorldSkills. Phillip will also undergo an intensive one month training programme for the welding of aluminium in preparation for Abu Dhabi. Nell is certain that if Phillip can improve as much as he improved following the SAIW Welding Challenge, he will do well in Abu Dhabi and bring home a medal of excellence, which will be a first for South African welding.

WorldSkills SA Welding Champ, Phillippus Terblanche

Thank you for your help

LINCOLN ELECTRIC AFROX

Phillip is a product of ArcelorMittal's training school in Vanderbijlpark, which is working in partnership with SAIW to improve the skills level in South Africa. Phillip was well supported by ArcelorMittal during the competition and his instructor, Peet Lottering was in attendance at the event. Lottering says "we are proud of Phillips's achievements and believe he will be an excellent ambassador for welding as a career."

The WorldSkillsSA welding competition, which ran in accordance with WorldSkills marking sheets, was assessed by regional experts, as well as past SAIW Young Welder of the Year winners, Jaco van Deventer and Houston Isaacs.

Nell thanked the Department of Higher Education and WorldSkillsSA for a well-run competition and for supporting welding as a skill. He also paid special tribute to both Lincoln Electric and Afrox for their support and sponsorship which aided in the smooth running of the competition. Lincoln Electric went the extra mile and flew in the welding equipment for the competition, which will also be the equipment to be used by competitors in Abu Dhabi.

The three participants at the WorldSkills SA Competition were: left - 3rd place: Samukelo Osbourne Mbambani, Middle - 2nd place: Nonhlanhla Angel Mathebula, Right - 1st place: Phillippus Terblanche

SAIW NOTICE BOARD

Mark Digby: Teaching SAINT

Mark Digby has won SAINT'S Best Teacher Award. The submission by SAIW management to the Awards Committee says it all.

Mr Digby, has been a very capable MT, PT, RT and UT lecturer since the late 80's. He has held SAQCC-NDT and PCN Level 3 certification since 2000, with level 2 qualifications dating back to 1980.

While Mr Digby provides excellent training in all the NDT methods, his contribution to UT lecturing in particular should be praised and awarded.

The results of students attending UT classes presented by Mr Digby exceed a pass rate of 80% with the feedback obtained being very complimentary towards his style of lecturing as well as his ability to transfer knowledge and skills.

Mark was born in Manchester in 1961 (no he does not support them!), was schooled in S.A. matriculating at Sunward Park High School.

His post-school education looks a bit like a mathematical equation! N3/N4/N5 Electro mechanical at Germiston Technical college; Qualified Electrician with trade test at Olifantsfontein; NDT SAQCC Level 2; UT, MT, RT, PT SAQCC Level 1; VT, NDT CSWIP Level 2; UT, MT, PT, RT: PCN Level III; UT, MT, PT SAIW Welding Inspector Level 1; SAIW Welding Inspector Level 2. Wow!

Mark says he really got into NDT by accident and has never regretted it. With a few breaks here and there he has been at the SAIW for a total of 14 years. Ben Beetge offered him his first post in 1995.

When asked what his secret is to good teaching, Mark said he believes that all students' needs are different and to be a good teacher you have to explain things well enough so that each individual is sure of understanding. It's also important to have a blend of theory, practical know-how, on the job experience and, above all, to create a situation where there is mutual respect between teacher and learner.

Mark has been married to Helen for 33 years and has four children – Christopher 31, Jonathan 28, Samantha 20 and Rachel 16 – and two grandchildren Luke 6 and Braydon 3.

Well done Mark!

Totsiens Martie

Martie Beetge has retired from the SAIW after an amazing 25 years at the Institute!

In her own words: "I started at the SAIW in January 1992 as a temporary receptionist when the then receptionist, Jackie de la Cruz, was tragically killed in a shooting accident. I was permanently appointed on 1 November 1993 and was transferred to the training department as the NDT Training administrator. I was later appointed as the examinations administrator and finally became the certification administrator for the SAIW," she says.

Martie was liked by all and sundry. She quietly did what had to be done, always retaining her sense of humour. "I tried to establish good relationships with everyone including the students who, with many of them, I have lasting friendships," she says.

Martie saw so many students enrol as "apprentices" and then complete their studies and become technicians, inspectors, specialists and technologists. "I enjoyed sharing in their achievements, but felt their pain when they were unsuccessful."

She says there are so many things she wants to do now that she has time to herself including spending more time with her grandchildren, kids and husband Ben.

"I enjoyed my time at the SAIW, there were tough times, but there were mostly happy and enjoyable times. Would I want it any different if I could choose again….NO!

Totsiens Martie. We'll miss you!!

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